

Varicocoele

Definition: dilatation of the veins of the pampiniform plexus of the spermatic cord due to an absence of venous valves (see Appendix)

Demographics

15% of men
30-40% of men with infertility
Up to 70% of men with secondary infertility
>90% on left

Presentation

1. Altered semen quality and infertility
Typically oligoasthenoteratospermia (OAT)
Many theories:
 - Increased temperature
 - Reflux of adrenal/renal metabolites
 - Testicular hypoxia due to stasis
 - Leydig cell dysfunction with decreased androgen production
 - Increased reactive oxygen species
2. Dull aching pain
3. Cosmetic concerns
4. Impaired testicular growth in adolescence

Diagnosis

Grade	Findings
I (small)	Palpable only with the Valsalva maneuver
II (moderate)	Palpable without the Valsalva maneuver
III (large)	Visible through the scrotal skin

Radiological diagnosis – veins measuring 3.5mm or larger in diameter demonstrating reversal in flow on valsalva. Non-palpable varicocoeles – even with valsalva – are not grade 1, but in fact ‘subclinical’ varicocoeles

Management considerations

Varicocoele repair;

- Unequivocally improves semen parameters
- Probably improves Leydig cell function (serum androgens)
- Only beneficial for palpable varicocoele – no evidence for benefit in subclinical varicocoele (Jarow 1996)
- May improve take home baby rates, but controversial:
 - 2 RCTs (Madgar 1995; Neischlag 1998) show conflicting results
 - Evers meta-analysis (Lancet 2003) famously found no benefit ($p=0.06$) but included patients with subclinical varicocoeles and men with no sperm abnormality. Also over 50% lost to follow-up and despite low numbers ITT analysis performed. Although not as statistically robust, when ‘as treated’ groups analysed, the results favour varicocoele repair.

Recent updated meta-analysis including only men with infertility, palpable varicocoele and at least one abnormal sperm parameter shows an odds ratio of pregnancy of 2.87 favouring varicocoele repair vs. no treatment (Marmar 2007)

Better outcomes in those with:

sperm counts > 5 million/ml

no testicular atrophy

normal sperm motility

low serum FSH (<300ng/ml)

recommended in boys with $\geq 20\%$ reduction in volume cf. other side – limited evidence of 'catch-up' growth

Management options (5)

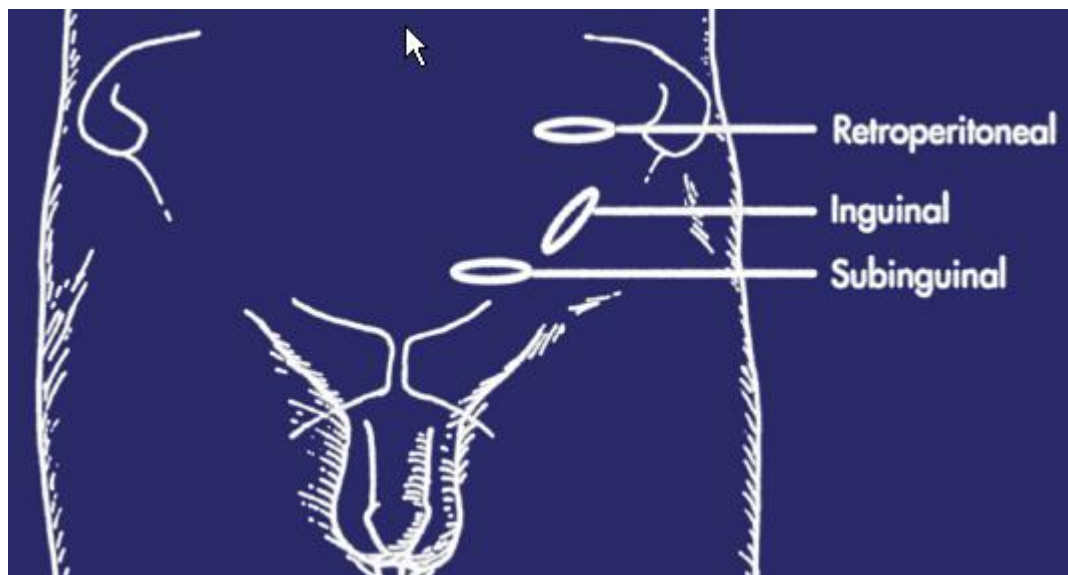
Percutaneous embolisation

Laparoscopic clipping

Retroperitoneal (Palomo 1948)

Conventional inguinal

Microscopic inguinal or subinguinal



Technique	Artery Preserved	Hydrocele (%)	Recurrence (%)
Retroperitoneal	No	7	11-15
Conventional inguinal	No	3-39	9-16
Laparoscopic	Yes	5-8	<2
Radiographic	Yes	0	4-11
Microscopic inguinal or subinguinal	Yes	0	<2

Percutaneous embolisation

Originally reported using sclerotherapy (Lima 1978)

Now typically coils, gelfoam or balloons

Particularly useful for recurrences – delineates anatomy

Avoids GA

Day-case procedure

Low hydrocoele rate

Complications

Technical failure

older series report ~ 25%

Recurrence

4-11%

Groin infection/haematoma/DVT

Laparoscopic

Ligation of testicular vein(s) draining via retroperitoneum

Concomitant ligation of testicular artery advocated by some – but small risk of testicular artery

Requires GA

Increased risk of significant complications cf. other procedures

Also ~5% risk of neuropraxia of anterior thigh ?diathermy injury to genitofemoral nerve

Retroperitoneal approach

Originally described by Palomo in 1948

Open equivalent of laparoscopic approach

2 fingers medial to ACIS – identification and ligation of internal spermatic vein

Preservation of testicular artery in adults, but high recurrence rates (11-15%) believed due to perforators

Lower rates in children and adolescents with intentional ligation of artery

Inguinal and subinguinal approaches

Preferred approaches in US

Subinguinal = minimal morbidity and high success rates, but difficult vs. inguinal

Microscopic techniques associated with lower recurrence and hydrocoele rates for each approach

Appendix

Anatomy of spermatic cord

3 layers

External spermatic fascia	ext. oblique aponeurosis
Cremasteric fascia	cremaster muscle
Internal spermatic fascia	transverses abdominis

3 arteries

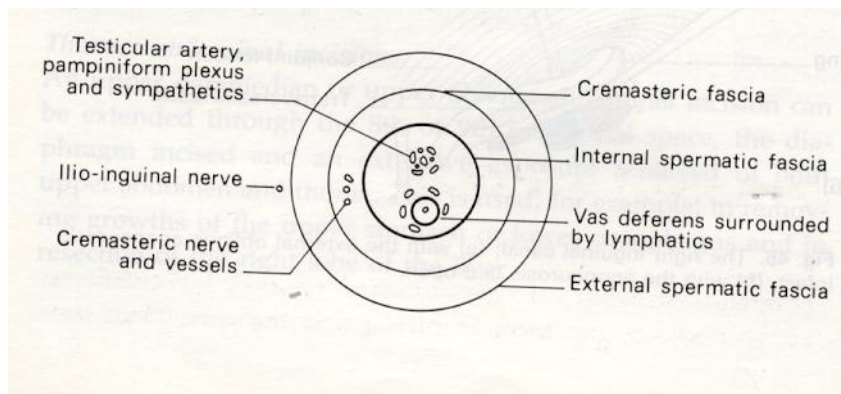
Testicular artery*	from aorta
Cremasteric artery	from inferior epigastric
Artery to the vas	from inferior vesical

3 nerves

Cremasteric nerve	from genitor-femoral nerve
Sympathetic nerves	
Ilio-inguinal nerve	on cord, not in it

3 other structures

Vas deferens
Pampiniform plexus
Lymphatics



- * Solitary testicular artery in 50%
- 2 testicular arteries in 30%
- 3 testicular arteries in 20%